

2

AD-A266 914



NAVAL WAR COLLEGE
Newport, R.I.

FIGHTING THE ANTI-BALLISTIC MISSILE CAMPAIGN
FROM THE THEATER COMMANDER'S PERSPECTIVE

SDTIC
ELECTE
JUL 12 1993
A D

by

John J. Hammerer, Jr.
Commander, U.S.Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

This document has been approved
for public release and sale; its
distribution is unlimited.

Signature: *John J. Hammerer, Jr.*

17 June 1993

93-15669



2707

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE			
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION OPERATIONS DEPARTMENT	6b. OFFICE SYMBOL (If applicable) C	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State, and ZIP Code) NAVAL WAR COLLEGE NEWPORT, R.I. 02841		7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) Unclassified Fighting the Anti-Tactical Ballistic Missile Campaign From the Theater Commander's Perspective (7)			
12. PERSONAL AUTHOR(S) CDR John J. Hammerer, Jr.			
13a. TYPE OF REPORT FINAL	13b. TIME COVERED FROM TO	14. DATE OF REPORT (Year, Month, Day) 930617	15. PAGE COUNT 23
16. SUPPLEMENTARY NOTATION A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
		Anti-Tactical Ballistic Missile Defense, ATBM	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) The maintenance of regional order will require Theater Commanders-in-Chief to plan flexibly and comprehensively to defeat an emerging tactical ballistic missile threat. The history of tactical ballistic missile use in warfare and the resulting strategic implications are reviewed. Possibilities for developing new approaches to countering the employment of tactical ballistic missiles are proposed. This discussion centers on conceptual issues and explores initiatives worthy of further study. This paper introduces a phased flexible deterrent strategy which includes cooperation with other Departments of the Government, revised national and theater strategies, modifications of the current theater commander-in chief's staff organization and use of apportioned forces.			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION Unclassified	
22a. NAME OF RESPONSIBLE INDIVIDUAL CHAIRMAN, OPERATIONS DEPARTMENT		22b. TELEPHONE (Include Area Code) 841-3414	22c. OFFICE SYMBOL C

Abstract of

FIGHTING THE ANTI-BALLISTIC MISSILE CAMPAIGN
FROM THE THEATER COMMANDER'S PERSPECTIVE

The maintenance of regional order will require Theater Commanders-in-Chief to plan flexibly and comprehensively to defeat an emerging tactical ballistic missile threat. The history of tactical ballistic missile use in warfare and the resulting strategic implications are reviewed. Possibilities for developing new approaches to countering the employment of tactical ballistic missiles are proposed. This discussion centers on conceptual issues and explores initiatives worthy of further study. This paper introduces a phased flexible deterrent strategy which includes cooperation with other departments of the government, revised national and theater strategies, modifications of the current theater commander-in-chief's staff organization and use of apportioned forces.

DTIC QUALITY INSPECTED 5

Accession For	
NTIS CRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

TABLE OF CONTENTS

CHAPTER	PAGE
ABSTRACT	ii
I INTRODUCTION.....	1
Tactical Ballistic Missiles	1
II IMPLICATIONS	4
Strategic Implications	4
Operational Implications	8
III THE SOLUTION	9
The Concept	9
IV ORGANIZATION FOR THE ATBM CAMPAIGN	12
Functional Organization	12
V CONCLUSION	20
NOTES.....	21
BIBLIOGRAPHY	23

FIGHTING THE ANTI-BALLISTIC MISSILE CAMPAIGN
FROM THE THEATER COMMANDER'S PERSPECTIVE

CHAPTER I

INTRODUCTION

Tactical Ballistic Missiles It is no longer a question if tactical ballistic missiles (TBM) fall on an undefended population center rather, *when and where* will the next storm of destruction and terror occur? Even more intriguing, what will the strategic implications of that event be? Can the damage be controlled and isolated or will it inevitably become the catalyst for even greater tragedy? While the specter of global nuclear war seems to have faded from the scene for the foreseeable future, the pall of a surprise attack hangs unrelenting over world leaders and their constituencies. Unfortunately for a growing number of people, the risks and consequences of this era are just as high as those of the cold war. The proliferation of these weapons to nations who lack well developed command and control systems and the mutual understanding developed over 50 years by the superpowers have made the world more unstable and conflict more likely than ever before. *The strategic and tactical implications arising from the use of tactical ballistic missiles require that unified commanders plan to conduct anti-tactical ballistic missile campaigns.* More than ever, the current national security environment dictates that these

campaigns include a broader more inclusive approach relying on political, diplomatic, economic and psychosocial elements as well as military measures.

Background The root of the TBM problem can be traced to the use in World War II of ballistic missiles by Germany against the Allies. By September 1944, Hitler had the capability to target British cities with V-2 missiles launched from Germany.¹ With a range of 200 miles and a warhead of 1,650 pounds, the V-2's were able to spread destruction and terror throughout Western Europe. Unlike its vulnerable predecessor, the V-1 cruise missile which was countered by British fighters and anti-aircraft artillery,² the V-2 was particularly devastating due to the fact that it could not be intercepted by any Allied forces then available.³ Post-war missile development, primarily by the United States and the Soviet Union, capitalized on the German program and improved the capability of the missile by improving reliability and accuracy, extending range and increasing payload.

By 1961 intermediate range ballistic missiles (IRBM) such as Thor, Jupiter and the SS-6 were deployed worldwide essentially under the control of the U.S. and the Soviet Union.⁴ The significant increase in the threat of these weapons has been due to several factors. Proliferation of the missiles, the technology necessary to produce them, the loss of control formerly provided by the superpowers and the lethality of the warheads they carry all contribute to a destabilizing influence. The Scud-b TBM, developed by the Soviet Union, is typical of

those possessed by Third World countries. It has an average speed of 3600 miles per hour and a range of 300 km.⁵ Even with the most sophisticated surveillance and command and control systems, the inertia associated with initiating a defensive reaction prohibits timely and effective response to an aggressor exploiting the element of surprise. In contrast to Hitler's V-2's, today's TBMs are much more accurate and reliable. What the missile lacks in accuracy is compensated for by the lethality of the warheads they possess. Although the number of nuclear weapons has decreased in the United States and the former Soviet Union, they are more available than even before due to the questionable level of security exercised by former Soviet states and the proliferation of technology. Most likely however, modern TBMs will carry advanced technology conventional, biological or chemical warheads. Ever complicating the situation is the fact that modern TBMs are mobile and launched from relatively simple transporters. Despite sophisticated surveillance equipment, the problem of detecting the launchers before or after the actual missile firing is a virtually intractable one. As will be seen, Desert Storm provides the most recent example of how difficult it has become to find the launcher and destroy it after the launch has occurred.

CHAPTER II

IMPLICATIONS

Strategic Implications The National Security Strategy of the United States has traditionally placed great importance upon global stability, world economic vitality and the support for developing democracies. JCS Publication 0-2 tasks Unified Commanders to protect and advance vital national interests in their theaters. The fragile balance necessary to ensure that these national objectives are achieved requires world order and stability both as a means and an end. Now as in the past, one of the cornerstones of American strategy of maintaining the viability of developing democracies, has been development of regional power centers which would both defend and be defended against aggression by hostile forces seeking to deny vital American national objectives. Israel and Saudi Arabia in the Middle East and the Republic of Korea in Asia are examples of countries which have helped preclude unrestrained challenges to democracy in the past and hopefully in the future. They are linch pins in a national strategy which relies on allies to achieve the conditions favorable for continued world stability. For many political, economic and military reasons, their prosperity is essential.

The dependence of the U.S. on strategic resources is well known and need not be discussed in depth here. Suffice it to say

that the insular American economy, denied vital resources or the means to trade those resources, would stagnate rapidly. Some nations are even more dependent than America on essential resources. For example, should Japan be denied precious oil her economy as well as those of the emerging Asian nations would most likely decline quickly. Factors such as burgeoning populations, dwindling resources and the increasing pressure of national, ethnic and religious movements have complicated the challenge of maintaining and protecting U.S. interests abroad. It is imperative that the Unified Commander plan comprehensively to prevent the catalyst of TBM warfare from starting a conflagration no one wants to endure.

Although the TBM is relatively new to warfare, there have been several vivid examples of its impact in the last fifty years.

Hitler's V-2 program resulted in over 3700 missiles being fired against the Allies, 1100 of them at England. Five hundred of these successfully reached targets in southern England. The TBM's high speed, plunging trajectory was virtually impossible to defend against. The combination of inadequate Allied surveillance and defensive systems and the V-2's ability to inflict destruction, caused significant damage to the morale as well as the cities of the British.

Britain's relief and expectation of coming victory as a result of the Normandy landing in June were smashed by the unstoppable rain of destruction brought by the V-2's . Not only did morale

at home suffer but so did that of the troops who worried about their insecure families. Former President Eisenhower stated that had the V-2 campaign started earlier during the preparation phase of Operation Overlord, serious interference would have occurred.¹ The only measure available for counteracting the V-2's was the bombing of production and launching facilities in Germany. Had the will and the ability of the British been seriously impaired by the V-2's, the return to Western Europe would have been seriously delayed and the length of the war extended. The first ballistic missile war ended only when Germany was defeated.²

The Iran-Iraq War also demonstrated the devastating effect on morale that the TBM can have. Iraq launched over 160 missiles against Iran. Following an attack against Tehran, an estimated 1.5 million people evacuated the city of 8 million.³ Once again, no creditable means of defense against the TBM was available. Iranian morale was so shaken that by the knowledge of the use of these weapons that volunteering suffered such that the strength of Iranian Revolutionary Guard dropped by one third to 200,000.⁴ Enhancing the effects of the missile attacks was the fear that Saddam Hussein might employ chemical weapons in connection with the Scuds. The TBM campaign against the Iranians was significant in destroying their will to fight on and was a important turning point in the war. Ultimately it added to the increasing momentum of the Iraqi offensive and contributed to the defeat of Iran.

The most recent and perhaps most illustrative example of the use of TBMs was in Operation Desert Storm . An improved Scud

missile, the al Hussein, was used by the Iraqis. Previous experience from the Iran-Iraq war and intelligence indicated that Saddam had the will and the capability to employ chemical weapons along with the missiles. As with Iran, Hussein's TBMs were designed to generate terror and break the will of the coalition. By firing 39 Scuds against Israel, Saddam sought to destroy the delicately constructed coalition, relieve Iraq from the pressure of the coalition's significant military power and refocus the Gulf hostilities on the U.S. and Israel as the disrupters of Pan Arab peace and unity⁵. For General H. Norman Schwarzkopf, Iraqi TBMs presented a challenge equal to that of the massed Republican Guards. Attacks on Israel's population evoked a spectrum of responses from terror to wrath. While not inflicting significant levels of physical destruction, Israel's economy was crippled due to business activity grinding to a halt.⁶ So great was the level of disruption, that no small amount of U.S. diplomatic effort was expended in trying to prevent the Israeli government from retaliating unilaterally. Diplomatic discourse reached the point where Israeli requests for retaliatory air strikes went through the State Department and the Department of Defense and were relayed to Central Command headquarters in Riyadh.⁷

Significantly in Operation Desert Storm, the coalition did have the means to defend against TBM attacks. The Patriot missile system was modified to kill Scuds and, perhaps even more important, one third of the 2000 daily sorties were flown in the hunt for the Scuds.⁸ In addition, Special Operation Forces (SOF)

were employed deep behind enemy lines to locate launchers. SOF efforts were successful in destroying 26 missiles on the final day of the war preventing a desperate attempt by Saddam Hussein to bring Israel into the war.⁹ The combination of these efforts lead to a reduction of Scud missile firings from 35 in the first week to 18 in the second week and thereafter to only an average of one Scud per day.¹⁰ Israel did not take up active participation in the war, the coalition so crucial to the success of the war was preserved and the Iraqi's were defeated.

Operational Implications The previous example illustrates some fundamentals of future conflicts involving TBMs. More than ever, the long range battle will be fought in real time. Modern TBMs are capable of covering approximately 300 miles in about 5 minutes of flight time. Further, since one of the main objectives of TBM employment is to inflict terror on the population, civilian targets will no longer be avoided but sought after by aggressors. Due to the lack of targeting accuracy and the potential use of weapons of mass destruction, the essential routine of society will be easily disrupted. Even worse, as in the case of Desert Storm, fragile coalitions necessary for regional stability could be shattered. The Theater Commander in the next major regional contingency may not have the luxury of total command of the air allowing him to devote a large portion of his air power to the ATBM campaign. It is clear that the current approach is not practical. What then should be done?

CHAPTER III

THE SOLUTION

The Concept In view of the significant success of Cold War deterrent strategies, the concept of flexible deterrence must be pursued by Theater Commanders-in-Chief (CINC) as the comprehensive approach to countering the TBM threat. The flexibility of the concept is derived from the variety of initiatives to be employed to deter and counter the use of TBMs.

The most basic aspect of the strategy involves limiting the proliferation of the missiles and their associated technology through diplomatic initiatives and domestic regulation. Theater Commanders, with the Chairman of the Joint Chiefs of Staff, can work with the State Department to curb the spread of these weapons to irresponsible governments. Leverage may be gained by negotiating treaties through revitalized international and regional security organizations. Control of economic assistance and international trading status may be an even more potent regulatory tool in the international arena. Domestically, CINCs should increase liaison with the Commerce Department, through the Department of Defense, to limit inadvertent as well as intentional transfers of critical technologies to potential adversaries.

The promise of prompt, unacceptable retribution should figure as well in the overall plan. Employing effective anti-tactical

ballistic missile (ATBM) systems could eliminate or significantly reduce the threat of TBMs once they are used.

A flexible deterrence policy is already feasible. The diplomatic and political infrastructure necessary achieve greater control is already in place. From a practical standpoint, it is critically important that the CINCs be formally tasked with planning ATBM campaigns in the Joint Strategic Capabilities Plan (JSCP). Given the enormity of present tasking and dwindling resources, little priority will be placed on the ATBM problem without JSCP tasking. JSCP tasking will also integrate the issue into the Planning Programming and Budgeting System (PPBS) driving force planners to provide the required resources. Technically most of the systems required such as satellite surveillance systems, command and control networks, precision guided munitions delivered by aircraft or cruise missiles, and land or sea based ATBMs are either in operation or scheduled for introduction soon.

Flexible deterrence is a suitable policy for the modern era. It achieves the objective of a stable world by working peacefully to limit the spread of the TBM threat. Recognizing the reality of an imperfect world, it imposes the credible threat of unacceptable losses on aggressors who respect only the strength of military arms. Such deterrence frees threatened nations from the financial burden of unilaterally developing ATBM systems and allows them to concentrate on more important economic objectives.

Flexible deterrence would likely be an acceptable policy. Essentially no new weapons are required. In an era of declining resources, its affordability is attractive. No commitment of ground troops or permanent forward basing on foreign soil is necessary to implement flexible deterrence.

Operational planning should reflect a strong international and domestic commitment to peace and security through strength. It should emphasize rapidity, accuracy and thoroughness of options in countering TBM attacks. Unified command initiatives such as coordinating with the Strategic Command in the areas of targeting, surveillance and C³I must be pursued.

If a coordinated strategy is not developed before the outbreak of hostilities, many undesirable implications could result. International stability would most likely be significantly be degraded. Regional economic vitality, so dependent on free trade could be threatened. The possibility of mass destruction, either to populations, the environment or civilization's infrastructure is also likely. As well, spheres of power and influence could easily shift to orientations less favorable for achieving national goals and vital coalitions could be fragmented. Finally, the fall of friendly foreign governments could result from the inability to successfully cope with the TBM threat.

CHAPTER IV

ORGANIZATION FOR THE ATBM CAMPAIGN

Functional Organization The ATBM campaign is not without historical precedent. In World War II the Allies faced the possible loss of their ability to continue the war due to the impact of German U-boats on trans-Atlantic shipping. Organizing the anti-submarine warfare campaign under the command of England's Admiral Sir Max Horton and America's Rear Admiral Francis Low was a major milestone in the war. The Chief of Naval Operations, Admiral Ernest J. King, recognized that one central authority was needed to organize intelligence, plans, operations, training, and research and development.¹ Likewise Winston Churchill entrusted the Battle of the Atlantic to Horton. Under his command, the British anti-submarine forces made great improvements not only in material and technical means but also in tactical leadership and morale.² The advantages of intelligence, organization and unity of command on the operational level were able to offset the advantage of the U-boats at the tactical level.

The nature of the ATBM campaign is such that it requires elements of many types of warfare. The principle of centralized planning and decentralized execution is particularly appropriate.³ Due to very short reaction times over long distances, decentralized execution is necessary for successfully

completing terminal phase missile engagements by land and sea based ATBM systems. On the other hand, a highly centralized organization would be the most effective for coordinating offensive action focused on destroying launchers, depots and production facilities.

Our most recent experience in Operation Desert Storm disclosed several problems which can be expected in future TBM scenarios. The lack of a credible deterrent policy, ATBM systems and a functionally oriented ATBM organization contributed to the difficulty in the TBM campaign. Technical challenges such as engaging Scuds in their terminal phase with a modified ATBM system resulted in a less than favorable kill probability. Finally, the difficulty in destroying mobile missile launchers and concealed missiles was never completely overcome. Had coalition forces not enjoyed overall air superiority and the ability to dedicate national level assets to the Scud hunt, the outcome of the ATBM campaign might have been far different.

An approach to conducting the ATBM campaign can be derived by considering a hypothetical scenario.

The initial phase of the campaign can be the most critical. Its ultimate success is easily determined by the absence of TBM warfare. Political and diplomatic efforts should focus on stemming proliferation of the weapons and negotiating treaties and mutual disarmament pacts. Intensive coalition building and the forging of solid global and regional attitudes of intolerance toward the irresponsible deployment and employment of TBMs and

weapons of mass destruction is essential. A good example of the success of a determined effort to achieve "weapon free zones" is the case of New Zealand's prohibition of nuclear weapons in her territorial waters. .

Recognizing that the world is inherently unsafe though is equally important in this phase. Constant evaluation of the current threat, in-depth contingency planning and current apportioning of forces are crucial to ensure security. This is the best time to provide the Theater Commander with joint forces having a high degree of interoperability. Procurements and training must stress the importance of integrating combat systems with common system protocols and operating procedures. There is no more challenging problem today than achieving the integration of the diverse inventory of surveillance and command and control systems employed by U.S. military forces. The exponential growth in the availability of electronic computing and processing systems and inability to define compatibility hampers interoperability of joint forces. The current situation may be best described as chaotic. Relentless demand by CINCs to Service Chiefs for compatible systems will be necessary to achieve the necessary interoperability.

Phase two of the campaign assumes that deterrence has failed and that the enemy has managed to launch a surprise TBM attack. The enemy's advantage of the element of surprise and the fog of war require that the operational level commander will have completed sufficient planning to ensure that an effective, rapid

response challenges both the enemy's will and ability to carry on further attacks. Based on the best available intelligence, command and control sites and infrastructure, launching, storage and production sites should be targeted in advance. Since international law is very specific concerning reprisals, the response must be carefully crafted in its exercise of the inherent right of self defense. Criteria such as proportionality, demand for redress and national command authority must be considered in the CINC's planning. Revenge and anticipatory reprisals are not in accordance with international law and must be avoided.⁴ Air strikes firing precision guided munitions or cruise missile attacks are appropriate for this phase of hostilities. The air strikes can either be launched from an aircraft carrier, flown from the continental United States or delivered by a cruise missile capable ship. Maintenance of the targeting list must be a continuous evolution and involve intelligence, cruise missile support activities and operational forces. From a psychosocial perspective, a decisive response to aggression is highly desirable for several reasons. Many belligerents recognize only the strength of resolve and power of force as reasons to obey international law. Further, the effort the enemy must invest in defensive operations detracts from his initiative and his ability to conduct further offensive operations. The risk in this course is that a belligerent will not think logically and may view a response as cause for escalation or as a reason to unify disjointed factions under the

banner of national survival. Difficulties with this phase of the operation may include delay in obtaining permission from national command authorities or direction from the cognizant regional security organization to carry out attacks whose purpose is to prevent further TBM launches. The necessity for having detailed, well coordinated and rehearsed response is imperative if the theater commander in chief is to accomplish his mission successfully.

The third phase of the campaign, initiated concurrently with Phase two, involves the immediate deployment of land and sea based ATBM systems. Forces such as Patriot missile batteries and AEGIS cruisers and destroyers are the most likely candidates for this type of mission. In addition to the ATBM role, they both are capable of accomplishing other missions. They are easily and rapidly deployed and do not require permanent forward basing. Sea based systems are not subject to territorial restrictions and can be sustained indefinitely. One of the most challenging aspects of this phase of the campaign is coordination between functional organizations. A high degree of interoperability between Army, Air Force and Navy commands is essential especially in the area of command control and communications. Short reaction times characteristic of the TBM problem require that surveillance, tracking, control and engagement centers be well organized and closely linked for the ATBM campaign to avoid organizational difficulties.

The vulnerabilities of this approach include the necessity of host nation and combat support for Patriot batteries and the restriction to coastal scenarios for the sea based systems. The most difficult aspect of this phase of the campaign is the real time coordination of forces necessary to successfully defeat a TBM attack. Currently the Joint Force Air Component Commander (JFACC) is designated as the authority in control of air defense operations in the theater. This may be fine for traditional air defense scenarios but it is inappropriate for the long range, high speed, short duration encounter which involves space cuing, long range verification and local engagements. Based on experience in Desert Storm and the nature of TBM warfare, a revision to doctrine is in order. The JFACC is tasked with running the entire air campaign. The revised doctrine should allow for a separate deputy responsible for the minute by minute management of surveillance, tracking, coordination and engagement functions. In littoral scenarios, a specifically dedicated AEGIS cruiser with a joint qualified air defense officer and his staff embarked would be appropriate. In strictly continental scenarios or prior to the arrival of the AEGIS cruiser, the staff may be better accommodated in an airborne warning and control system (AWACS) aircraft. In phase one, this ATBM commander and his staff would have primary responsibility for developing plans to ensure smooth functioning of the diverse organizations and resources required to fight the real time ATBM battle. Communications plans, satellite tasking for surveillance and

command and control, targeting functions and force positioning are just some of the scenario driven issues which can be addressed prior to the outbreak of hostilities. Imminent or completed missile attacks would prompt the shift to tactical command of ATBM forces.

Phase four of the ATBM campaign can be viewed as the culmination of efforts to eliminate the ATBM threat. As Operation Desert Storm illustrated so well, the tactical advantages of the ballistic missile are difficult to overcome. The relatively small, mobile launchers and missiles are difficult to locate and destroy. Capable of being located well behind enemy lines and being moved within six minutes of launch, they tied up a significant portion of the coalition air forces during Desert Storm.⁵ Despite the fact that a tremendous amount of air power was expended in trying to neutralize the Scuds, only limited success was achieved. So significant was the TBM threat that a great variety of national level assets were employed. The significant task of coordinating and directing large and varied forces requires a senior joint officer well versed in the specifics of ATBM warfare. In the future, any regional conflict involving significant use of TBMs should allow for the appointment of a major deputy for ATBM operations on the staff of the Joint Task Force Commander. The decisions of King and Churchill to unify the command of forces engaged in the U-boat campaign set a successful precedent for this approach. The ATBM warfare commander described in phase three would be subordinate

to this senior joint officer. The deputy for ATBM operations would be charged with the overall responsibility for conducting phases two through four of the ATBM campaign. The difficulty in establishing this organization of course would be that a preordained priority could be introduced into the planning process. Competition for scarce resources could conceivably increase despite the lack of a genuine TBM threat. As well, in the absence of a TBM threat significant staff resources could be wasted. A disciplined approach on the part of the theater commander and his staff most likely could avoid these problems.

CHAPTER V

CONCLUSION

The tactical ballistic missile is an integral part of warfare in the new world order. Its proliferation to Third World nations and the increasing likelihood of those nations to become involved in regional contingencies make it imperative for the Theater Commander to plan carefully on how he will contend with this increasingly dangerous threat. Adoption of a four phase flexible deterrent strategy which focuses diplomatic and economic resources as well as military power to contain the TBM threat can do much to reduce potentially undesirable strategic consequences. The appointment of a deputy for ATBM operations on the staff of the Joint Task Force Commander and an ATBM warfare commander on the staff of the Joint Force Air Component Commander can facilitate the coordination and direction of forces involved in the ATBM campaign. History has recorded and experience has confirmed that failure to adequately prepare for this aspect of the theater campaign could have serious strategic implications.

NOTES

CHAPTER I

1. Jacob Neufeld, The History of Ballistic Missiles in the U.S. Air Force, 1945-1965. (Washington D.C.: U.S. Government Printing Office, '984), p. 12.
2. Ibid. p.36
3. Ibid. p. 41.
4. Ibid. p. 227.
5. Seth W. Carus, Ballistic Missiles in the Third World, Threat and Response (New York, Praeger Publishers, 1990), p. 31.

CHAPTER II

1. D.D. Eisenhower, Crusade in Europe, (New York: Da Capa Press, 1977) p. 260.
2. G. Harry Stine, ICBM: The Making of the Weapon that Changed the World. (New York: Orion Books, 1991), p.167.
3. Chaim Herzog, The Iran-Iraq War: Impact and Implication (New York: St. Martins Press, 1989), p. 263.
4. Ibid p. 264.
5. Hiram Feuerwerger, The Arrow Next Time? Israel's Missile Defense Program for the 1990's, (Washington, D.C., Washington Institute for Near East Policy, 1991), p.263.
6. Ibid. p. 8
7. H. Norman Schwartzkopf, It Doesn't Take A Hero: The Biography of H. Norman Schwartzkopf. (New York, Bantam Press, 1992), p. 418.
8. Ibid. p. 418.
9. Douglas Waller, "Secret Warriors" Newsweek, 17 June 1991, p.28.

10. Schartzkopf, p. 418.

CHAPTER IV

1. Thomas B. Buell, Master of Seapower: A Biography of Fleet Admiral Ernest J. King (Boston: Little Brown & Company, 1980), p.293.

2. Admiral Karl Doenitz, Memoirs: Ten Years and Twenty Days, Anthenaum-Verlag Junker und Dunnhaupt, Bonn, 1958. p.317.

3. U.S. Chairman of the Joint Chiefs of Staff, A Doctrinal Statement of Selected Joint Operational Concepts. (Washington: 1992) p.8.

4. U.S. Office of Naval Operation, The Commander's Handbook on the Law of Naval Operations, NWP-9, (Rev A) (Washington: October 1989), p. 6-3.

5. Schwartzkopf, p. 419.

BIBLIOGRAPHY

1. Buell, Thomas B. Master of Seapower: A Biography of Admiral Ernest J. King. Boston: Little, Brown & Company, 1980.
2. Carus, Seth W. Ballistic Missiles in the Third World, Threat and Response. New York: Praeger Publishers, 1990.
3. Doenitz, Karl. Memoirs: Ten Years and Twenty Days. Bonn: Anthenaum-Verlag Junker und Dunnhaupt, 1958.
4. Eisenhower, D.D. Crusade in Europe. New York: Da Capa Press, 1977.
5. Feuerwerker, Hiram. The Arrow Next Time? Israel's Missile Defense Program for the 1990. Washington, D.C.: Washington Institute for Near East Policy, 1991.
6. Herzog, Chaim. "A Military Strategic Overview" in Karsh, Efraim, ed. The Iran-Iraq War: Impact and Implications. New York: St. Martin's Press, 1989.
7. Neufeld, Jacob. The History of Ballistic Missiles in the U.S. Air Force 1945-1965. Washington D.C.: U.S. Government Printing Office, 1984.
8. Schwartzkopf, H. Norman. It Doesn't Take a Hero: the Autobiography of H. Norman Schwartzkopf. New York: Bantam Press, 1992.
9. Stine, G. Harry. ICBM: The Making of the Weapon that Changed the World. New York: Orion Books, 1991.
10. U.S. Chairman of the Joint Chief of Staff. A Doctrinal Statement of Selected Joint Operational Concepts. Washington: 1992.
11. U.S. General Accounting Office. Operation Desert Storm: Data Does Not Exist to Conclusively Say How Well Patriot Performed, GAO/NSIAD-92-340. Washington, D.C., September, 1992.
12. U.S. Office of the Chief of Naval Operations. The Commander's Handbook on the Law of Naval Operations, NWP (Rev A). Washington: 1989.
13. Waller, Douglas. "Secret Warriors" Newsweek, 17 June 1991, p. 28.